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FISHERIES BULLETIN

Volume III Number 2
March-April 1950

AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

ngton, D.C., U.S.A.

UNITS

Weight, volume, capacity, length, and area are expressed in metric units. "Tons" and "quintals," when not qualified, therefore mean "metric tons" (1,000 kilograms) and "metric quintals" (100 kilograms), respectively.

The term "dollars," unless otherwise specified, refers to U.S. dollars.

CONVERSION FACTORS

Converted from:	To:	Multiplier
General		
Pounds	Metric tons	0.0004536
Hundredweight (112 pounds)	" "	0.050802
Hundredweight (100 pounds)	" "	0.04536
Quintal (112 pounds)	" "	0.050802
Short ton (2,000 pounds)	" "	0.9072
Long ton (2,240 pounds)	" "	1.0161
U.S. gallons	Liters	3.7853
Imperial gallons	"	4.546
Fisheries products		
Hectoliter (herring or oil)	Metric tons	0.093
Wet-salted cod and allied species	Dried basis	0.66

SYMBOLS

... Not available

ø Negligible (less than half the unit used)

- Nil

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OF THE UNITED NATIONS

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1201 Connecticut Avenue, Northwest
Washington 6, D. C.

Bulletin of New
Publications No. 3

FISHERIES
March, 1950

An International Digest of Fisheries Technology

WORLD FISHERIES ABSTRACTS, Vol. I, No. 1. (Single copies 75 cents; annual subscription $4·00) FAO has just published the first issue of World Fisheries Abstracts, a bimonthly issued in English, French, and Spanish editions and containing abstracts of technical articles from periodicals and serial publications, published laboratory reports, government bulletins, and other publications containing information of importance to the fishing industry. As the increasing amount of material being published in the field of fisheries technology makes it extremely difficult for a person working in this field to keep up with the latest developments, FAO has found it desirable to undertake the task of collecting and publishing such information in an easily available form.

World Fisheries Abstracts covers the field of fisheries technology: processing methods, boat design, fishing methods, chemical examination of fishery products, etc. It does not cover publications of a more scientific nature which are generally found extracted elsewhere.

The information which is here collected is extracted from about 130 different publications originating in about 25 different countries. From these sources the most pertinent articles are abstracted in such a way that the subscriber will find in a condensed form as great a part as possible of the information contained in the article. At the same time complete references will be given in order that subscribers may be able to secure the original article when desired.

World Fisheries Abstracts will thus serve to give up-to-date information on the developments of fisheries technology. However, subscribers will also wish to be able to refer at any time to such information when specific questions come up. The abstracts are therefore published in such a form that they may be cut out and filed according to one of the three filing systems for which they are coded, and the publication is accompanied by a Handbook (168 pages, 75 cents, free to subscribers), which gives the various subjects related to fisheries technology, arranged alphabetically. The Handbook, for each subject, will refer the use to the code or subject heading. The information desired will then easily be found directly in the files which therefore will serve as an encyclopedia of fisheries technology, constantly kept up to date.

The Handbook also gives a complete list of the publications covered by World Fisheries Abstracts and the various classification systems. Both of these features may prove useful for other purposes than for filing of abstracts.

FISHERIES BULLETIN

Volume III Number 2
March-April 1950

FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS
WASHINGTON, D.C., U.S.A.

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Economic Notes

In the tables that follow, statistics on primary production and trade in fisheries products are brought up to date 1/ and the trade figures tabulated by total in the January-February issue are broken down by specified country. An analysis of the 1949 primary production situation is planned for the next issue of the Bulletin, when further information will supplement the figures now available.

To summarize briefly the trends observable at this stage:

-- Aggregate landings in 14 countries, representing almost half the world's fish production, were in 1949 slightly in excess of landings in 1948.

-- The most important tendency in European fisheries is the decline of imports into Germany, which causes radical adjustments in some producing countries; for example, in Iceland, where hitherto most landings have been exported as fresh or frozen fish, plans are being made for the production of large quantities of salted cod. As world production of this commodity has already reached the prewar level, the market difficulties already encountered by Canada may extend to all exporters of salted cod.

Table 4. - Landings of Fish, Prewar, 1946, 1947, and 1948 and Preliminary Figures for 1949 Landings Compared with Landings During Same Period of 1948

Country	Calendar year				Partial year or year			1949 as percentage of 1948
	Average 1934-38 a/	1946	1947	1948	Period covered	1948	1949	
	(.....Metric tons b/.....)				(... Metric tons c/.....)			(Percent)
Canada (excl. Nfld.) . . .	506 000	612 000	533 000	644 000	Jan.-Dec. d/	579 400	533 800	92
Newfoundland e/	213 500	206 300	228 600	179 100	Jan.-Dec.	179 100	(187 100)	104
Denmark f/	90 900	197 400	205 400	223 500	Jan.-Dec.	217 500g/	240 500h/	111
France i/ (1933-37). . .	315 400	244 500	306 600j/	434 600j/	Jan.-Oct. k/	83 100	76 400	92
Germany: Bizone (1938).	669 000	264 800	279 800	380 200	Jan.-Dec.	380 000	471 000	124
Iceland	268 900	368 200	477 200	464 700	Jan.-Dec. l/	409 200	337 300	82
Ireland	10 500	21 100	18 300	23 100	Jan.-Dec. d/	20 700	11 900	57
Japan m/	3 078 300	3 177 500n/	2 472 100	2 332 600o/	Jan.-Dec.	2 332 600	2 721 300p/	117
Netherlands	227 500	190 400	278 100	269 400	Jan.-Dec.	257 900	230 600	89
Norway	1 055 700	933 300	1 205 300	1 454 100	Jan.-Dec. q/	1 297 200	1 035 100	80
Sweden	116 000	183 900	163 400	230 700r/	Jan.-June	71 400	60 400	85
United Kingdom	1 162 100	1 031 900	1 138 600	1 195 700	Jan.-Dec. s/	1 087 300	1 042 500	96
United States	1 927 000	1 996 000	2 345 000	2 040 000t/	Jan.-Dec.	2 040 000t/	2 131 900t/	105
Total	9 640 800	9 427 300	9 651 400	9 871 700		8 955 400	9 079 800	101

NOTE: Figures in parentheses are estimates.

a/ Unless otherwise indicated.

b/ Round fresh weight except for Germany, which is reported weight.

c/ Reported weight unless otherwise stated. It should be noted that these data are on a different basis than calendar year data; in most instances, the latter were given in sources on a round fresh weight basis or converted from the reported weight to a round fresh weight basis.

d/ Sea fisheries only. Landings in Canada for Jan. 1950 were 34,600 tons, as compared with 16,800 tons for Jan. 1949.

e/ Data for Newfoundland represent exports of salted cod and related species converted to round fresh weight basis.

f/ Faeroe Islands and Greenland not included.

g/ Including 22,338 tons landed directly in British harbors and 217 tons landed directly in Swedish harbors.

h/ Including 20,377 tons landed directly in British harbors.

i/ Excluding shellfish.

j/ Metropolitan France only.

SOURCE: Official publications and special reports.

k/ Landings of tuna, sardines, mackerel, and cod.

l/ Landings in Iceland for the month of Jan. 1950 were 7,600 tons, as compared with 15,300 tons for Jan. 1949.

m/ Excluding seaweed.

n/ Including black-market estimate of 1,420,800 tons; excluding 34,100 tons of whales.

o/ Including unreported landings estimated to be an additional 15 percent.

p/ Calculated on basis of 1948 landings.

q/ Most recent figures on Norwegian fisheries show that up to the third week in Feb. 1950, 535,100 tons of winter herring and spawning cod were landed, as compared with 376,400 tons landed during the same period in 1949.

r/ Landings in Swedish ports - 183,200 tons.

s/ Landings in England and Wales for Jan. 1950 were 47,700 tons, as compared with 39,800 tons for Jan. 1949.

t/ Round fresh weight for Jan.-Dec. 1948 and 1949. Preliminary estimates.

1/ Table 4 on landings contains information received up to 6 March 1950. Tables 5 and 6 on trade contain information received up to 20 February 1950.

Table 5. - Exports of Certain Fisheries Products from Principal Exporting Countries, 1938, 1946-48, and Latest Available Period of 1949 Compared with Same Period in 1948

Commodity	Calendar year				Partial year or year		
	1938	1946	1947	1948	Period covered	1948	1949
	(. . . . . Metric tons . . . . .)					(. . . . Metric tons . . . .)	
Fish, fresh or frozen							
Iceland	17 430	96 710	87 621	151 781	Jan.-Dec.	151 781	156 442
Norway	120 070	80 787	136 031	182 826	Jan.-Nov.	178 623	177 621
Denmark	49 945	82 295	81 797	79 921	Jan.-Nov.	73 657	90 684
Sweden	22 532	4 992	6 100	(13 526)	Jan.-June	13 526	16 079
Netherlands	20 699	6 438	12 807	13 427	Jan.-Oct.	8 398	11 796
Canada	49 871	106 630	92 208	96 380	Jan.-Nov.	90 382	85 463 a/
Total	280 547	377 852	416 564	537 861		516 367	538 085
Fish, salted, dried, or smoked							
Iceland	80 248	28 769	35 268	29 509	Jan.-Dec.	28 550	30 548
Norway	115 729	185 379	172 282	174 173	Jan.-Nov.	165 268	146 062
Denmark	4 545 b/	12 676 b/	15 415	16 933	Jan.-Nov.	15 510	8 935
Sweden	4 192	29 058	11 162	(21 273)	Jan.-June	21 273	8 958
Netherlands	76 740	14 869	48 816	48 937	Jan.-Oct.	32 733	38 331
Canada	42 373	48 972	43 988	49 164	Jan.-Nov.	45 118	65 102 a/
Total	323 827	319 723	326 931	339 989		308 452	297 936
Fish, canned							
Iceland	15	514	340	959	Jan.-Dec.	959	423
Norway	25 419	25 902	31 406	33 855	Jan.-Nov.	30 418	25 636
Denmark	391	251	1 489	2 605	Jan.-Nov.	2 217	4 542
Sweden c/	968	2 488	2 533	(2 533)	Jan.-June	625	1 233
Portugal	34 389	46 421	37 825	41 553	Jan.-Nov.	39 416	21 882
Netherlands	555	1 359	6 493	5 345	Jan.-Oct.	4 682	4 928
United States of America	40 416	72 522	82 006	34 330	Jan.-Sept.	29 109	39 389
Canada	28 403	67 786	69 075	39 862	Jan.-Nov.	38 338	48 221 a/
Total	130 556	217 243	231 167	161 042		145 764	146 254
Crustaceans and mollusks							
Iceland	62	(-)	(-)	(-)	Jan.-Dec.	-	-
Norway	3 410	1 438	4 219	3 754	Jan.-Nov.	3 141	2 791
Denmark	b/	b/	38	2 511	Jan.-Nov.	698	6 246
Sweden	164	44	15	(474)	Jan.-June	474	438
Netherlands	46 118	23 376	46 589	44 133	Jan.-Oct.	31 524	30 856
Canada	9 008	11 507	9 803	11 285	Jan.-Nov.	10 140	11 884
Total	58 762	36 365	60 664	62 157		45 977	52 215
Fish oils							
Iceland	27 920	25 289	25 934	36 371	Jan.-Dec.	36 371	12 917
Norway	32 423	19 697	25 432	28 956	Jan.-Nov.	26 340	28 042
Denmark	1 830	513	391	1 155	Jan.-Nov.	870	1 126
Portugal	1 304	2 257	1 734	386	Jan.-Nov.	345	1 359
Netherlands d/	50 466	25	7 205	5 176	Jan.-Oct.	3 537	2 731
Canada	14 165	2 023	938	4 553	Jan.-Nov.	3 545	14 233 a/
Total	128 108	49 804	61 634	76 597		71 008	60 408
Fish meal and fertilizer							
Iceland	22 294	16 364	16 622	39 617	Jan.-Dec.	39 617	6 950
Norway	80 472	10 254	8 382	13 629	Jan.-Nov.	12 672	10 406
Netherlands	942	125	1 262	2 412	Jan.-Oct.	2 016	1 255
Canada	19 518	29	-	21 737	Jan.-Nov.	16 307	23 344 a/
Total	123 226	26 772	26 266	77 395		70 612	41 955
Aquatic mammal oils and fats							
Iceland	843	3	-	773	Jan.-Dec.	773	2 499
Norway	5 064	11 443	36 623	3 980	Jan.-Nov.	3 749	7 133
Portugal	685	2 668	3 667	1 601	Jan.-Nov.	1 292	1 108
Total	6 592	14 114	40 290	6 354		5 814	10 740

NOTE: Figures in parentheses are estimates.

SOURCE: Official publications and special reports.

a/ Newfoundland included from 1 April 1949.

b/ Crustaceans and mollusks included with Fish, salted, dried, or smoked.

c/ Includes some crustaceans and mollusks.

d/ Marine mammal oils may be included with Fish oils.

Table 6. - Imports of Certain Fisheries Commodities by Principal Importing Countries, 1938, 1946-48, and Latest Available Period of 1949 Compared with Same Period in 1948

Commodity	Calendar year				Partial year or year		
	1938	1946	1947	1948	Period covered	1948	1949
	(. . . . . Metric tons . . . . .)					(. . . . . Metric tons . . . . .)	
Fish, fresh or frozen							
United Kingdom	83 081	206 150	217 645	126 962	Jan.-Dec.	126 962	186 765
Denmark	14 298	1 745	5 352	10 059	Jan.-Nov.	8 219	15 136
Netherlands	4 394	2 433	4 550	4 672	Jan.-Oct.	4 232	2 014
Germany	151 178	89 431 a/	75 556 a/	(157 019)	Jan.-Sept.	157 019	178 654
United States of America	54 276	115 353	106 961	117 155	Jan.-Sept.	139 165 b/	134 941 b/
Sweden	13 064	4 166	7 767	(7 767)	Jan.-June	2 235	2 673
Total	320 191	419 278	417 831	513 634		527 832	520 183
Fish, salted, dried, or smoked							
United Kingdom	18 656	5 441	4 259	4 709	Jan.-Dec.	4 709	4 939
Denmark	9 029	5 243	11 050	8 923	Jan.-Nov.	8 302	5 366
Netherlands	3 254	1 211	2 585	1 234	Jan.-Oct.	981	402
Germany	61 812	73 102 a/	37 663 a/	(77 348)	Jan.-Sept.	77 348	60 280
United States of America	44 480	55 581	38 665	44 396	Jan.-Sept.	b/	b/
Sweden	36 617	23 639	21 898	(21 898)	Jan.-June	4 122	2 926
Total	173 848	164 217	116 120	158 508		95 462	73 913
Fish, canned							
United Kingdom	73 424	79 782	79 234	25 448	Jan.-Dec.	25 448	43 227
Denmark	511	65	111	155	Jan.-Nov.	119	443
Netherlands	4 020	1 040	97	138	Jan.-Oct.	120	161
United States of America	21 206	20 770	15 404	21 801	Jan.-Sept.	16 909	15 565
Sweden c/	1 424	727	1 204	(1 204)	Jan.-June	201	398
Total	100 585	102 384	96 050	48 746		42 797	59 794
Crustaceans and mollusks							
United Kingdom	13 712	4 072	5 750	6 584	Jan.-Dec.	6 584	9 476
Denmark	259	81	81	73	Jan.-Nov.	62	318
Netherlands	1 693 d/	211 d/	360 d/	215 d/	Jan.-Oct.	191	153
United States of America	17 014	22 237	23 047	30 351	Jan.-Sept.	1 730	1 878
Sweden	628	550	460	(1 279)	Jan.-June	1 279	2 098
Total	33 306	27 151	29 698	38 502		9 846	13 923
Fish oils							
United Kingdom	51 788	21 522	25 011	30 254	Jan.-Dec.	30 254	24 800
Denmark	11 287	1 373	2 508	3 138	Jan.-Nov.	2 659	3 579
Netherlands e/	74 170	8 052	19 200	17 126	Jan.-Oct.	14 284	5 348
Total	137 245	30 947	46 719	50 518		47 197	33 727
Fish meal and fertilizer							
Denmark	3 438 f/	3 188	2 906	10 746	Jan.-Nov.	10 673	8 461
Netherlands	23 363	3 934	3 751	6 485	Jan.-Oct.	5 792	5 391
Total	26 801	7 122	6 657	17 231		16 465	13 852
Aquatic mammal oils and fats							
United Kingdom	229 311	67 973	147 921	124 425	Jan.-Dec.	124 425	139 792
Denmark	35 024	4 972	10 457	10 761	Jan.-Nov.	10 633	17 882
Total	264 335	72 945	158 378	135 186		135 058	157 674
Miscellaneous aquatic plant and animal products							
United Kingdom	507	200	331	220	Jan.-Dec.	220	154
Denmark	794	474	1 259	1 006	Jan.-Nov.	882	1 207
Netherlands	193	610	949	720	Jan.-Oct.	610	783
Total	1 494	1 284	2 539	1 946		1 712	2 144

NOTE: Figures in parentheses are estimates.

SOURCE: Official publications and special reports.

a/ Bizone only.
b/ Salted, dried, or smoked fish and other edible aquatic animal products may be included with Fish, fresh or frozen.
c/ Includes canned crustaceans and mollusks.
d/ May include oysters and mussels for breeding.
e/ Aquatic mammal oils and fats may be included with Fish oils.
f/ Includes meat meal and whalebone meal.

Developments

CANADA EXPANDS FISHERIES DEPARTMENT

A recent issue (Vol. 2, No. 5, November 1949) of the Canadian Fisheries Department Trade News reports plans to establish three additional branches within the Department - a Fish Inspection Branch, a Technical Services Branch, and a Consumer Services Branch. This expansion of the Department of Fisheries is part of an over-all program for the further development of the country's commercial fisheries which was announced in the Canadian House of Commons 6 December 1949.

Previously, the Department of Fisheries has been made up of five branches - Administrative Services, Legal Services, Field Services, Information and Educational Services, and Marketing Services. In addition, there are two semi-independent boards appointed by and responsible to the Minister of Fisheries - the Fisheries Research Board of Canada and the Fisheries Prices Support Board. The former serves as the scientific branch of the Department; the latter constantly reviews factors affecting the fishing industry and offers assistance when necessary.

The existing branches of the Department of Fisheries are actively engaged in many fields, all of which are directly associated with the protection and development of the fisheries resources of the country. Included are protection and enforcement services, engineering and maintenance work, improvement of fish culture practices, collection of production statistics, economic studies, and publicity and education programs.

At the present time, the Department has inspection services in operation for certain fishery products. The new Fish Inspection Branch will expand this work, for it is felt that the quality of fish products is a prerequisite to increased sales. The Technical Services Branch will also strive for over-all improvement in quality. One section will be devoted to distribution outlets, giving to wholesalers and retailers the knowledge necessary for better fish handling as it is developed through research. This branch also plans to extend the Department's exploration work, to make surveys of existing fishing areas, and to discover new resources. It will offer demonstration services to the fishermen, comparable to the extension programs existing in the agriculture field. This involves methods of handling gear and the preservation of fish at sea.

The Consumer Services Branch will be concerned with increasing the domestic consumption of fish. An experimental kitchen will develop new recipes and home economists will be assigned to the field where their duties will be to give demonstrations and lectures on the cooking of fish. Pamphlets dealing with information on buying and cooking of fish will be issued, and other similar projects designed to increase consumption will be undertaken.

FIRST LATIN-AMERICAN CONGRESS ON MARINE BIOLOGY

The first Latin-American Congress on Marine Biology was held in Vina del Mar, Chile, from 10 to 15 October 1949. The meeting was organized by a Chilean Commission, headed by Dr. Parmenio Yanez, Director of the Marine Biological Station at Montemar.

The Congress was attended by delegations from Argentina, Brazil, Chile, Dominican Republic, Ecuador, Mexico, Panama, Peru, Uruguay, and UNESCO. Technical committees dealing with General Marine Biology, Physical and Chemical Oceanography, Zoology, Fisheries, and Fish Biology were appointed. Several scientific papers were read and discussions were held on the need of an international approach to biological problems especially in the field of biological oceanography, and on other related subjects of importance.

It was recommended that a Permanent Latin-American Committee on Oceanography, Marine Biology, and Fisheries be established at Montemar, Chile, and members to serve on this committee were selected. Statutes governing the activities of the Committee were prepared for subsequent submission to Latin-American Governments for acceptance.

THE GULF AND CARIBBEAN FISHERIES INSTITUTE

The Gulf and Caribbean Fisheries Institute was organized in 1948 and held its inaugural session at Miami Beach, Florida, U.S.A. in August of that year. The second annual meeting was held at the same place in November 1949. The wide support received at both sessions by various agencies and organizations of the United States of America and Caribbean countries indicates that it is firmly established. The Institute is primarily concerned with the problems of commercial fisheries in the southeastern part of North America, which includes the Gulf of Mexico and the Caribbean Sea.

The welcoming address published in the 1948 Proceedings states that the Institute "seeks to bring together first of all the fishermen, the fish dealers, the fish processors; secondly, the fishery biologists, technologists and economists; and thirdly, the administrators of the fisheries." In addition to providing a means for an exchange of views between the divergent groups represented, the Institute provides a forum for the exchange of information and the discussion of problems concerning the fisheries of the Gulf of Mexico and the Caribbean Sea.

The Institute is closely associated with the Marine Laboratory of the University of Miami at Coral Gables, Florida, which is its headquarters. Dr. F. G. Walton Smith, who is Director of this laboratory, is also Director of the Institute. Mr. C. P. Idyll is the Executive Secretary. Business of the Institute is conducted by an executive committee.

THE INTERNATIONAL WHALING COMMISSION

On 30 May 1949, delegates from 11 countries met in London to organize the International Whaling Commission and to draw up a program of work. This meeting was the realization of the hopes and the work over many years of a number of sincere men that had at heart the conservation of the whale. The Commission was designed as an effective and flexible instrument under which both investigation and regulation of this great international resource could be carried out and its conservation assured for all time.

The London meeting was the culmination of a series of events covering several decades. The date given by most authors as the beginning of modern whaling is 1868, when the harpoon gun came into general use. Up to about 1909 the main whaling areas were the Arctic and North Atlantic regions. After 1909 the Antarctic gradually became more and more important, and in time by far the most whaling was done there.

Whaling continued without serious restriction, except in the case of individual companies, until 1932 when, following a conference called by the League of Nations at Geneva in 1930, the delegates of several interested governments drew up an agreement designed to regulate whaling operations. This agreement, supplemented by voluntary regulations imposed on their operations by some of the whaling companies themselves, proved at best only a partial answer to the problem, as not all operators in the whaling areas co-operated.

In 1937 another conference was held in London, and another agreement was drawn up. This latter agreement was by far the best and most effective to date, but it still failed to limit the number of whales caught, and not all whaling countries abided by its regulations. Other meetings were held to study the effects of these regulations and to extend the agreements.

Another and highly important conference was held in London in 1944, during the war, when no one knew whether whaling would ever be resumed or not. It was at this conference that agreement was reached to limit the number of whales allowed to be taken in the Antarctic.

A further conference was held in London in 1945 and still another in Washington in 1946. It was at the 1946 Washington Conference that the countries agreed to the formation of an International Whaling Commission, which was finally organized at the London meeting.

Countries sending delegates to the inaugural meeting were Australia, Canada, France, Iceland, the Netherlands, Norway, South Africa, Sweden, the United Kingdom, the United States of America, and the U.S.S.R. and observers were present from Argentina, Brazil, Chile, Denmark, New Zealand, FAO, and the Supreme Commander for the Allied Powers (SCAP). Professor B. Bergesen of Norway was elected Chairman, Dr. Remington Kellogg of the United States, Vice-Chairman, and Mr. A. T. A. Dobson of the United Kingdom, Secretary.

The 1949/50 whaling regulations were decided upon at this meeting, as well as matters dealing with finances and the temporary headquarters of the Commission which were to be at the United Kingdom Fisheries Department, St. Stevens House, London. It was also decided that the International Whaling Statistics Committee at Sandefjord,

appointed in 1929 upon recommendation of the Whaling Committee of the International Council for the Exploration of the Sea, would continue for the present to receive and compile whaling statistics and would recommend closures of seasons.

The International Whaling Commission was at long last a fact. It carried a great responsibility to the world: to supervise the wise use and husbanding of this great natural resource.

FISH FARMING IN ISRAEL

Fish farming is one of the oldest culture methods of producing food, originating about 500 B.C. in China. Since that time, it has continued to be an important method of obtaining animal protein food. First centralized in Asia, pond culture was introduced into Central Europe during the 14th Century and the practice is now spreading to other regions.

The common carp (Cyprinus carpio) is the principal species used in the European fish ponds. Fish farming began on a small scale in Israel in 1934, with the introduction of carp fry from Central Europe into what was then known as Palestine. Since that time, the production of carp has made enormous strides, the greatest development taking place during World War II. So far, fish farming in Israel is synonymous with carp culture, as the practices are based upon experience gained in Central Europe.

The fish farms are well distributed about the country. In 1946, about half of the ponds contained slightly saline water and were in the Beisam Valley. About one-quarter were in the Lake Hula region; the remainder were at various Jewish settlements in the Jordan Valley, just south of the Sea of Galilee, in the saline area just north of the Dead Sea, and on the coastal plain south as far as Tel Aviv.

These estimates of the carp production from the fish farms of Israel for the years 1939 through 1946 and for 1948, show the rapid development that has occurred:

Estimates of Carp Production in Israel, 1939-1946 and 1948

Year	Metric tons
1939	0.8
1940	21
1941	54
1942	219
1943	440
1944	820
1945	1200
1946	1300
1948	2400

The transport and marketing of carp are simple. The fish are carried alive in trucks equipped with canvas tanks filled with water, and air is bubbled into the canvas tank from a cylinder of compressed air. A five-ton truck is able to transport a ton of fish with mortalities of 1 percent or less. After reaching the retailer, the fish are kept in small tanks and the consumer receives the fish alive.

In 1946, the surface area of the carp ponds was approximately 1,500 acres (607 hectares). In 1949, it increased to 3,500 acres (1416 ha.) with indications of further expansion. It is reported that in March 1949, the Fish Breeders' Association presented a plan to the Israeli Ministry of Agriculture to increase the area of fish ponds to more than 12,000 acres (4856 ha.). This area is expected to yield 10,000 tons of carp annually.

Experimentation is being carried on in some places to increase the carp yield and to reduce the expenses of production. So far, only European carp have been used, a species which requires supplemental feeding. Lupine seeds and cottonseed residue are the basic food fed to these carp, but maize (corn), sesame oilcake, and other foods are used. It is believed by some that species other than carp may prove to be more profitable, especially those which do not need supplemental feeding. The use of species of complementary feeding habits, so chosen that all the available food is utilized, might also be considered.

FISHERIES INVESTIGATIONS IN EAST AFRICA

According to the Third, Fourth and Fifth Progress Reports (April, September, and December 1949) of the Research and Scientific Services, the United Kingdom, through the East Africa High Commission, is sponsoring fisheries investigations in the non-self-governing territories of Uganda, Kenya, and Zanzibar, and in the trust territory of Tanganyika. Initially, the work has been confined to the fresh-water fisheries, but it is expected to be extended to the marine fisheries in 1950.

There are two organizations carrying on the fisheries investigations, the East African Inland Fisheries Organization with headquarters at Jinja, Uganda, and the Lake Victoria Fisheries Service established at Mwanza, Tanganyika. The former is concerned with biological research problems; the latter is collecting information about the existing fishing industry with a view to its expansion and management.

Preliminary research on Lake Victoria has been concerned with the distribution, ecology, breeding, feeding, and growth rate of several species, particularly of the genus Tilapia and certain species of Haplochromis and Mormyrus. Fishing experiments have been conducted to obtain information on the abundance of species of the genus Mormyrus. The work has indicated that there is a large potential fishery in the deeper waters of Lake Victoria.

Work has been started on the genus Haplochromis which occurs in enormous numbers in Lake Victoria and comprises over 50 species. These species are small and are not of economic importance; however, it is thought it would benefit the existing

fisheries if many could be removed. Studies are in progress to determine how they might be removed in sufficient numbers without catching the young of the genus Tilapia.

Work has also been started on Lake Albert. Here data have been collected regarding the size to which the various commercially important fish grow. The small number of species of Haplochromis in this lake, compared with the populations in Lake Victoria, may be due to the presence of the Nile perch (Lates niloticus) and another predatory species. If this can be proved, it may be beneficial to introduce such predators into Lake Victoria.

The Lake Victoria Fisheries Service has made a preliminary survey of the fisheries of the Speke Gulf in Tanganyika. Data collected include a census of the fisherman and statistics on the types of nets in use. Catch statistics are also collected. This type of information is also being gathered for the Gulf of Kenya area and being extended to most of the other regions of Lake Victoria. One object of the catch records is to determine the length frequencies of the species of Tilapia caught in the various mesh sizes of the nets presently in use. These data will be used to formulate fishing regulations.

The reports express the opinion that the marine fisheries of the East African coast, from Lamu in the north to Mikindini in the south, including those based on the islands of Zanzibar, Pemba, and Mafia, are capable of considerable expansion. These fisheries are at present largely undertaken by Africans equipped only with canoes and primitive gear. The inshore fisheries appear capable of expansion and in the offshore waters there are possibilities for taking pelagic species. Negotiations took place in 1949 between the United Kingdom Colonial Office and the Governments of Kenya, Tanganyika, and Zanzibar, with a view to initiating exploratory fishing and biological studies to determine the feasibility of developing the marine fisheries. Recommendations for the establishment of marine fisheries research, with headquarters at Zanzibar, have been approved in principle by the governments concerned, and details of the scheme are being worked out by the United Kingdom Colonial Office. It is hoped that such a program can be put into effect in 1950.

Fisheries Division Activities

● The Chief of the Economics and Statistics Branch, Mr. G. M. Gerhardsen, the Chief of the Technological Branch, Mr. Mogens Jul, and the Regional Fisheries Officer for Europe, Mr. M. J. Girard, attended a meeting of the Fisheries Subcommittee of the Organization for European Economic Co-operation (OEEC), held in Paris 24 and 25 February. The meeting considered ways and means of making a review of the marketing of fish in Europe with an eye to the possibilities for expansion.

● The Director of the Fisheries Division, Dr. D. B. Finn, left Washington 5 March to attend the second annual meeting of the Indo-Pacific Fisheries Council in Gronulla, Australia. Dr. Finn will visit several countries en route, including Lebanon, Egypt, Pakistan, India, Ceylon, Thailand, and the Philippines. He will discuss with fisheries officials of these countries the proposed Expanded Technical Assistance Program and FAO's regular program of work. He is expected back in Washington about the end of May.

● The Regional and Assistant Regional Fisheries Officers for Asia and the Far East, Dr. G. L. Kesteven and Dr. S. W. Ling, visited Indochina in late January and held discussions with government officials on the country's fisheries program.

Dr. Kesteven and Dr. Ling spent two weeks in Ceylon in February, at the request of the Ceylon Government, advising on the implementation of Ceylon's fisheries development program referred to in the January-February issue of the Fisheries Bulletin.

Following the Ceylon visit, Dr. Kesteven proceeded to Pakistan, at the request of that Government, to make an assessment of available fisheries equipment and personnel, and to recommend what further equipment and personnel will be necessary for a three-man survey team which will visit Pakistan later in the year. His evaluation of the situation, made at the time the fishing fleet was in operation, will enable the Pakistan Government to utilize the more or less inactive months from March to August to secure the necessary additional equipment and personnel for the survey team.

● The Regional Fisheries Officer for Latin America, Dr. B. F. Osorio-Tafall, accompanied the Director-General on his recent tour of several Latin-American countries (Peru, Chile, Argentina, Paraguay, Uruguay, and Brazil). Dr. Osorio consulted with government officials on the proposal to establish a Regional Fisheries Council for Latin America and the implementation of other projects in the 1950 program of work approved at the Fifth Session of the FAO Conference. It is planned to hold a meeting in Latin America in late 1950 or early 1951 to consider the establishment of a South American Fisheries Council.

Notes on Publications

Fiskerilitteratur 1945-46 (Fisheries Literature 1945-46). E. Koefoed. Aarsberet. Vedkommende Norges Fiskerier, Vol. 1, pp. 1-51. Oslo, Norway, 1947. In Norwegian.

This is a bibliography of publications dealing with commercial fishing, fish technology, and fishery biology which have appeared since 1938 and are available in Norway. They are indexed according to author and subject.

Aarsbok 1949, Göteborgs och Bohus Läns Havsfiskeförening (Yearbook of the Göteborg and Bohuslän Seafisheries Association). Compiled by Nils Rosen. Göteborg, Sweden, 1949. 352 pp. In Swedish.

This yearbook gives an account of the saltwater fisheries of the Swedish west coast province of Bohuslän, including preliminary but quite detailed statistics. It also contains an alphabetical list of registered fishing craft, indicating gross tonnage, horsepower, and owner. The rest of the book is in the form of a manual on navigation, with some governmental regulations on fisheries, conversion factors, and brief instructions on first aid.

Fiskernes Salgsorganisasjoner (Fishermen's Sales Associations). Director of Fisheries, Norway. A. S. John Griegs, Boktrykkeri, Bergen, Norway, 1949. 35 pp. In Norwegian.

This pamphlet gives a list of the Norwegian fishermen's sales associations, the by-laws of which are approved by the Ministry of Fisheries in accordance with the so-called "raw fish law" (originally of 1938). It lists particulars about site, managers, etc., for each association and gives the most recent version of the by-laws.

Taschenbuch für den Handel mit Fischen und Fischwaren (Handbook for the fish trade). O. Brenning, Hans A. Keune-Verlag, Hamburg 1, Germany, 1949. 197 pp., 36 illus. In German.

This handbook was written as a reference book for fish retailers. It discusses the sources of supply of the German fish trade, i.e., the main fishing grounds of the German and other North European fishing fleets. The German fishing ports and the main types of commercial fish landed in each are described. Illustrations and short descriptions of the commercial seawater and fresh-water fishes are included, giving the seasons when they are available. The handbook also deals with the various types of fishery products on the German market, of both domestic and

foreign origin, i.e., fresh, frozen, salted, canned, smoked, and marinated fish, their sources, and the methods of handling them in retail stores. A brief chapter covers the price structure of the fish trade.

The Commercial Fish Catch of California for the Year 1947 with an Historical Review 1916-1947. Fish Bulletin No. 74. California Division of Fish and Game, Bureau of Marine Fisheries, Sacramento, California, U.S.A., 1949. 267 pp., 99 fig. In English.

The eleventh of a series started in 1929 for the presentation of the records of the commercial fish catch of the State of California, this bulletin also includes a series of historical reviews of the more important California fisheries and a list of the common and scientific names of the fishes, crustaceans, and mollusks of this area.

Directorio Inter-Americano de la Industria Pesquera (Inter-American Directory of the Fishing Industry), Vol. 1, No. 1. Editores Interamericanos, Los Angeles, California, U.S.A., 1949. 68 pp., illus. In Spanish.

This is the first issue of a magazine devoted to the fisheries of Latin America. It contains information on Latin-American fisheries, articles of general interest by well-known fisheries scientists, and a directory of fish dealers and suppliers of fishing and fish processing materials in both Latin America and the United States of America.

Statistics of a Lake Trout Fishery. F. E. J. Fry. Biometrics, Vol, 5, No. 1, pp. 27-67. American Statistical Association, Washington, D.C., U.S.A., March 1949. In English.

This is a report on the lake trout (Cristivomer namaycush) fishery of Lake Opeongo in Ontario, based on records of a creel census undertaken as an experiment in methodology. In the paper the growth rate, age composition, and fecundity of the trout are related to statistics of catch with the express aim of building up from these data some logical pictures of the trout population from which the fishery is drawn.

The Efficacy of Catch Limitations in Regulating the British Columbia Herring Fishery. Albert L. Tester. Transactions of the Royal Society of Canada, Vol. 42, Series III, Section 5, pp. 135-163. Ottawa, Ontario, Canada, May 1948. In English.

The author reviews the history of the herring (Clupea pallasii) fishery on the west coast of Vancouver Island. He includes a description of the quota system of regulation, which was applied when indications of decline in the supply were suspected, an interpretation of recent fluctuations in catch in the light of available information, and a description of preliminary results of an investigation designed to test the efficacy of catch limitations. The latter investigation involves abandoning catch quotas

for an indefinite number of years to study the reaction of the population to the increased fishing effort.

Rannsóknir fiskideildar 1937-1939 (Investigations conducted by the Department of Fisheries of the University Research Institute 1937-39). Arni Fridriksson. Rit Fiskideildar, Vol. 1, pp. 3-56. Atvinnudeild Háskólans, Reykjavik, Iceland, 1940. In Icelandic.

The article describes work carried on by the Department of Fisheries of the University Research Institute at Reykjavik, Iceland during 1937 to 1939, together with a general review of past investigations. The marine work reported on includes investigations dealing with the density of Norway haddock (Sebastes marinus); experimental trawling; the collection of hydrogeographic data; size, weight, age, and sex determinations; and plankton sampling. Considerable work was carried out on the Faxa Bay fishery problem. Fresh-water research included limnological studies of two lakes and rivers in Iceland. The author also refers to the work of foreign investigators in the area.

The Sea Fishes of Southern Africa. J. L. B. Smith. Central News Agency, Ltd., Cape Town, Union of South Africa, 1949. xvi + 550 pp., 104 illus., appendix. In English.

The book is a comprehensive, illustrated work on the sea fishes of southern Africa. According to the author, about 1, 275 species of fish have been recorded and most of them are dealt with in this volume. A detailed composite index, as well as a separate index to common names, is provided for ready reference.

Possibilities for Oyster Culture in Puerto Rico and the Virgin Islands. W.A. Chipman and P. E. Thompson. Special Scientific Report: Fisheries No. 9. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., January 1950. 19 pp. In English.

The authors report the results of their study of the oyster resources and of the possibilities for the development of an oyster industry through cultivation in Puerto Rico and the Virgin Islands. At present, the oyster industry in Puerto Rico is virtually non-existent, and there is no marketing of locally produced oysters in the Virgin Islands. The study concludes that the introduction of a new species of oyster, rather than improvement of the native oyster, seems to offer the best means of developing an oyster industry, but any introduction of new species must be started on an experimental basis under the auspices of the two governments.

Nordurlands-sildin (The Herring of the North Coast of Iceland). Arni Fridriksson. Rit Fiskideildar, Vol. 1, pp. 1-340. Atvinnudeild Háskólans, Reykjavik, Iceland, 1944. In Icelandic.

As an introduction to this book, which deals mainly with the author's investigations begun in 1931, are presented the historic features of the Icelandic herring fishery, including information on the fishery and data on past scientific investigations. Subject matter includes data on the life history and food of the herring, as well as on the effects of oceanographic conditions upon herring populations.

A Bibliography of Lobster Culture. Leslie W. Scattergood. Special Scientific Report 64. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., 1949. 26 pp. In English.

This bibliography pertains to lobster culture practices and information on the early life history of the two species of lobsters, Homarus vulgaris and H. americanus. Reference is made to approximately 340 papers published in Europe and North America, 33 of which the author has singled out as the more important sources of information on the subject.

Methods of Estimating Vital Statistics of Fish Populations. William E. Ricker. Indiana University Publications, Science Series No. 15. Indiana University, Bloomington, Indiana, U.S.A., 1948. 101 pp. In English.

This publication reviews procedures applied in the quantitative analysis of the abundance of fish populations. The topics considered under the heading "vital statistics" are restricted to include: (1) abundance of a population as to size and age; (2) total mortality at successive ages, or within each year; (3) separation of total mortality into its components - fishing mortality and natural mortality.

In assembling examples to illustrate either well-known or newly proposed procedures, the author states that as far as possible, he has used the published records of actual investigations in an effort to bring the subject closer to reality.

Journal of Marine Research. Vol. 7, No. 3, pp. 125-686. Sears Foundation for Marine Research, Bingham Oceanographic Laboratory, Yale University, New Haven, Connecticut, U.S.A., 1948. In English.

This number of the Journal comprises a collection of 41 papers on hydrography and marine biology. It commemorates the 60th birthday of Dr. Harold Ulrik Sverdrup, the famed Norwegian oceanographer, and contains a list of his published papers, which cover more than 160 titles.

The Distinguishing Features of Fish. For the information of public health officers, students, and others concerned with British food fishes. Fishmongers' Company, London, England, 1949. 18 + 95 + iv pp., 81 pls. In English.

This book presents descriptions and colored illustrations with the scientific and common names of all the food fishes, including crustaceans and mollusks, which may be expected to be found in the markets of the United Kingdom. A further list of the more familiar common names is given at the end of the book.

Die Frischhaltung von Fischen durch Kälte (Keeping fish fresh by means of cold). R. Plank. Fischwirtschaftskunde, Band VIII, Teil 1, Lieferung 1. Hans A. Keune-Verlag, Hamburg 1, Germany, 1947. 90 pp., 33 illus., paper-bound. In German.

The prewar development in the technique of chilling and freezing fish and the cold storage of frozen fish are described and well illustrated. The properties and manufacture of ice are discussed, as well as the various factors affecting the cooling rate of fish. The various types of freezing methods and systems are reviewed chronologically and the theoretical problems of freezing are considered in detail. The concluding section deals with the factors affecting the quality of frozen fish. A bibliography of some 145 titles covers the most important literature up to 1941.

The Advertising, Labelling and Composition of Food. United Kingdom Ministry of Food. H. M. Stationery Office, London, W.C. 2, England, 1949. 81 pp. In English.

The report covers the administration, during 1944-48, of the Sale of Food Regulations. The work of the Ministry of Food resulted in the elimination of scores of misleading names and descriptions of foods and achieved, in the labelling of prepacked foods, legal standards or agreed definitions, for the protection of the purchaser. Codes of practice, which have no force of law, have been adopted, after consultation with the trade, and are generally accepted by the manufacturers, especially for vitamin and mineral claims.

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Other FAO Fisheries Publications

FAO YEARBOOK OF FISHERIES STATISTICS - 1947

Published in Washington, D.C., August 1948. Bilingual, English and French, with Preface in Spanish. Photo-offset. 368 pp. Price US$4.00 or the equivalent.

Part I of this volume consists of 143 statistical tables on the import and export trade of 61 countries in fish and fisheries products since 1930. Part II contains 86 tables on (a) landings and (b) miscellaneous subjects such as the number of fishermen, craft, etc., for about 20 countries.

SALTED COD AND RELATED SPECIES

FAO Fisheries Study No. 1, English edition published in July 1949, Washington, D.C. Printed xii + 196 pp. French and Spanish editions in press. Price US$2.00 or the equivalent.

A comprehensive study of the factors influencing production and trade of salted cod and related species during the inter-war period, and an analysis of present problems of the salted cod industry. 67 pages of statistical tables.

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